8.6 An Update on the Effect of HLB on Orange Juice Flavor – 2) Sensory Evaluation

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There have been some anecdotal reports that Huanglongbing (HLB) or citrus greening disease, recently introduced in Florida, may impart off flavor to orange juice. It is of interest to the processing industry to determine what affect fruit from trees of various stages of infection would have on processed orange juice quality. The objective of our work was to determine the effects of HLB on orange juice quality. Results from early infected trees (2006) showed that differences between juice from HLB- trees were mostly due to lower acid content and higher solids-to-acid ratio, resulting in sweeter juice (1). More trees were sampled in 2007 from three cultivars and several harvests. Results showed a high tree-to-tree variation, with no difference between fruit from some HLB-affected trees and control, to some difference (less than 5 on a 10-point scale) for some other trees. When noticeable, differences between affected trees and control were mostly detected by taste (as opposed to smell), and described as less sweet/fruity and sometimes bitter. In 2006 and 2007, juice was hand-squeezed and underwent a mild flash-pasteurization to minimize flavor changes due to processing. More trees were sampled in 2008, and juice was processed under commercial conditions using an FMC-type extractor and pasteurized under simulated commercial conditions at USDA. Differences between affected and control juice were largely varietal. There was barely any flavor difference (only for some trees) between Valencia HLB and control juice, however, when juice was blended for all HLB or healthy trees, no difference was found. In Hamlin juice, there were some flavor differences perceived by trained panelists. While the total oil content and solids-to-acid ratio in Hamlin juice was similar to that of Valencia juice, total soluble solids was lower, explaining why some flavor differences could be better perceived. Flavor differences detected thus far in non-symptomatic fruit would not likely be detectable in blended juice under commercial conditions.

Reference: